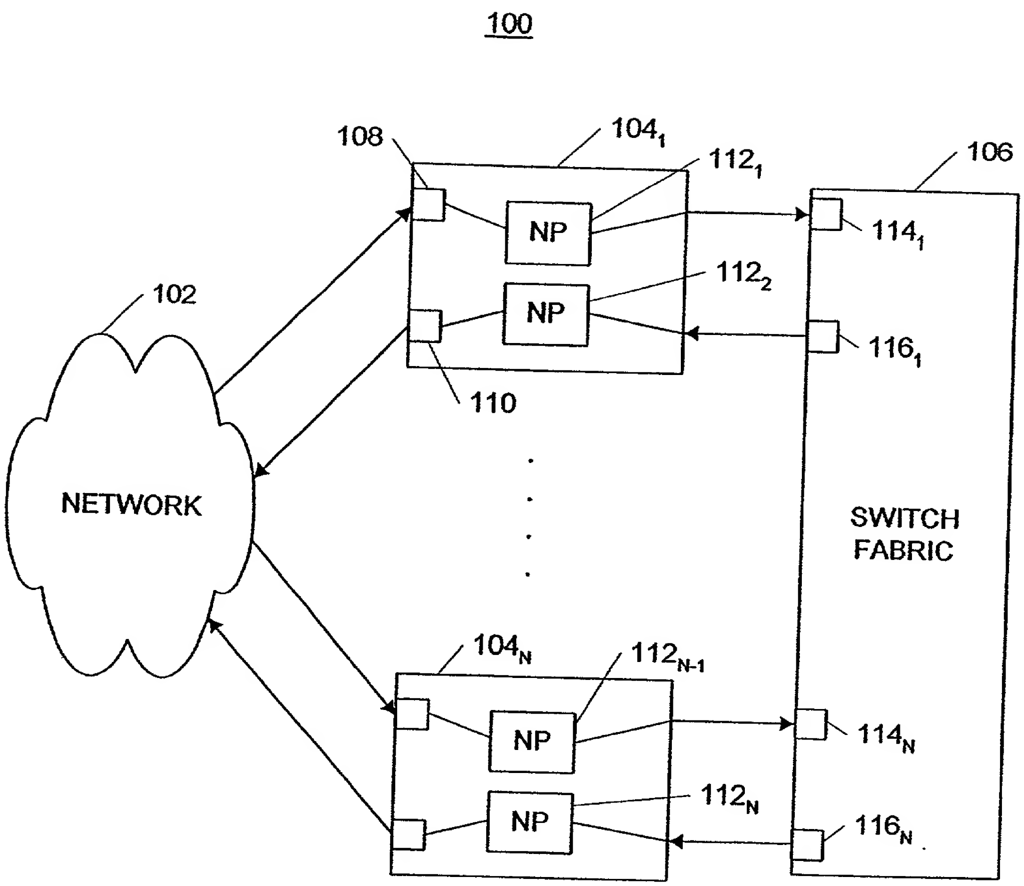


FIG. 1

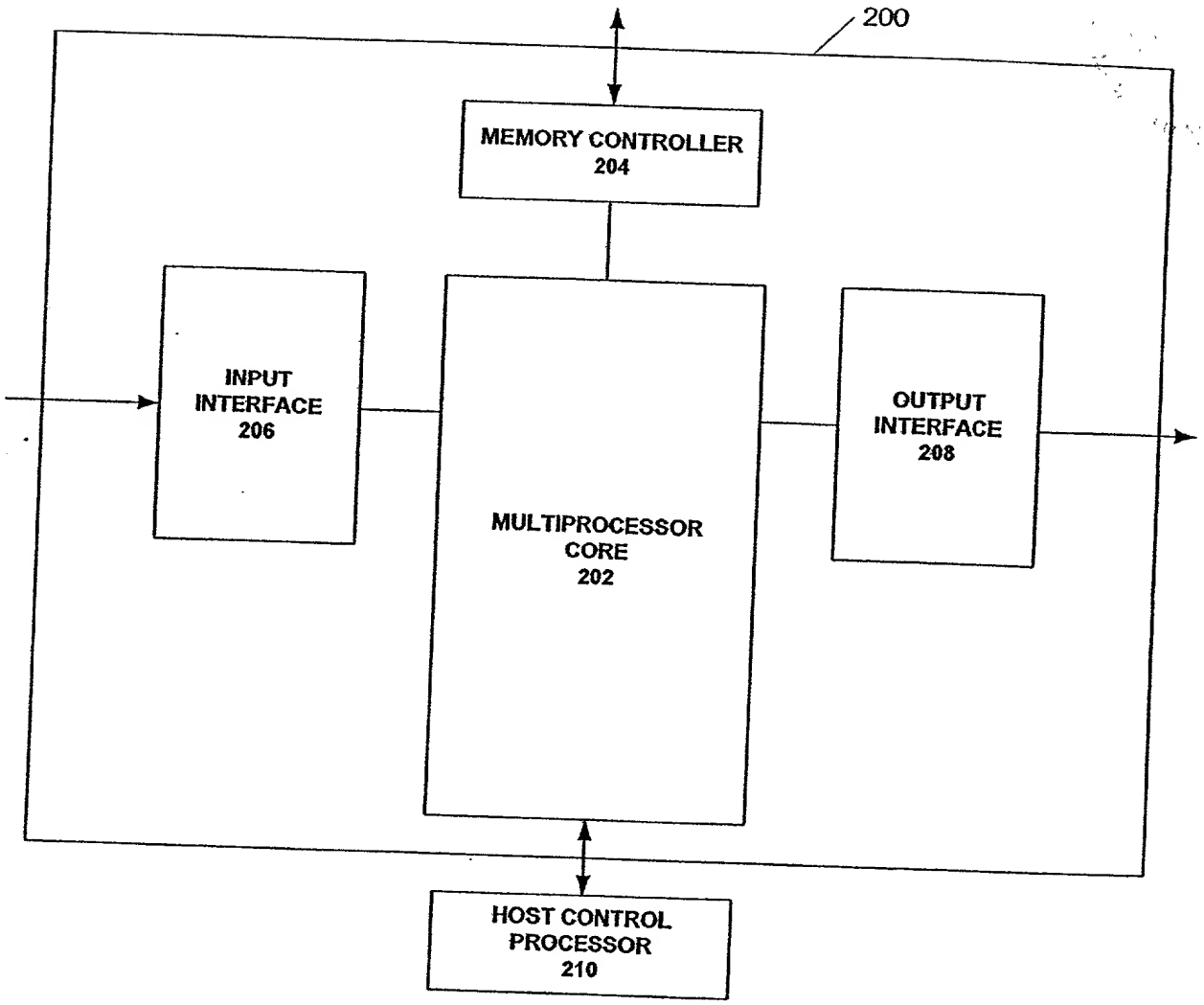
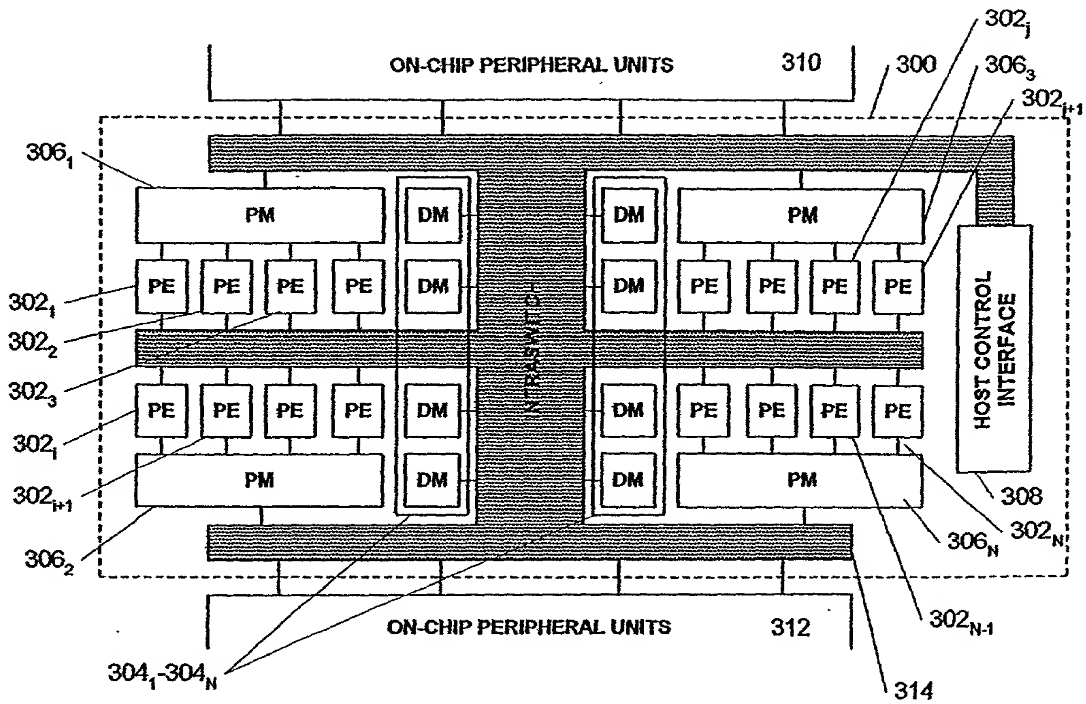

200
MEMORY CONTROLLER
204
INPUT
INTERFACE
206
MULTIPROCESSOR
CORE
202
OUTPUT
INTERFACE
208
HOST CONTROL
PROCESSOR
210

FIG. 2



PM: PROGRAM MEMORY
DM: DATA MEMORY
PE: PROCESSING ELEMENT

FIG. 3

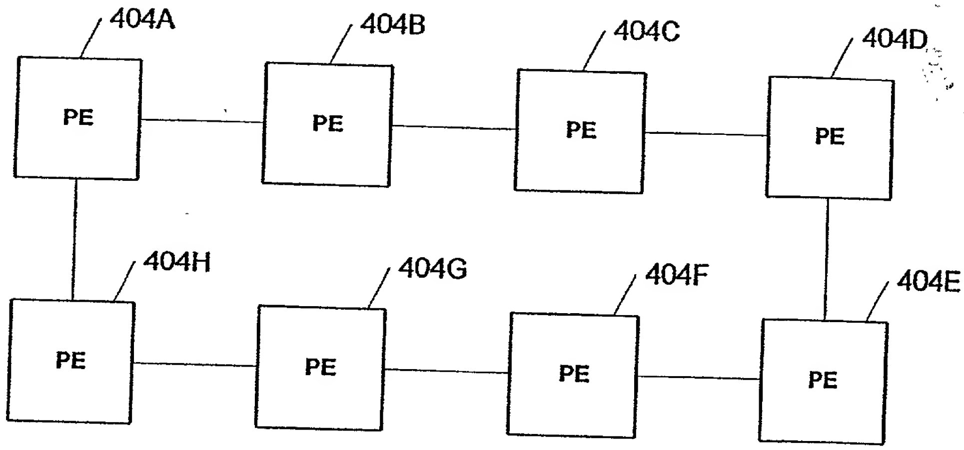

404A
404B
404C
404D
PE
PE
PE
PE
404H
404G
404F
404E
PE
PE
PE
PE

FIG. 4A

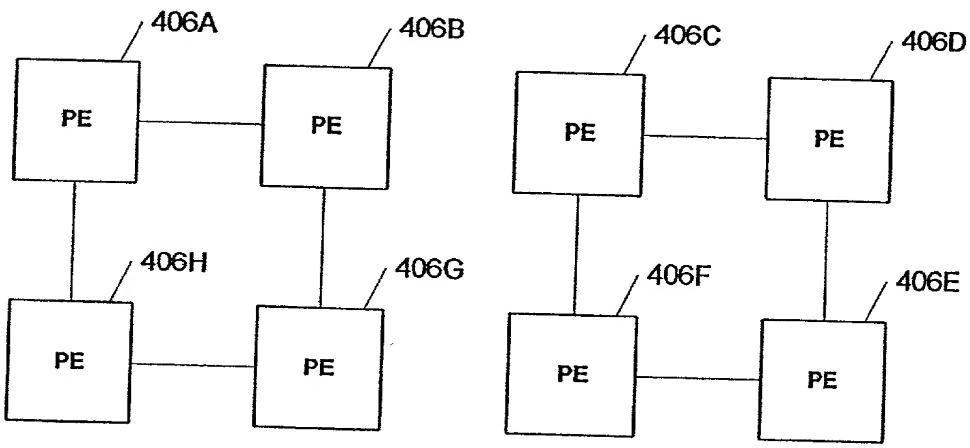

406A
406B
406C
406D
PE
PE
PE
PE
406H
406G
406F
406E
PE
PE
PE
PE

FIG. 4B

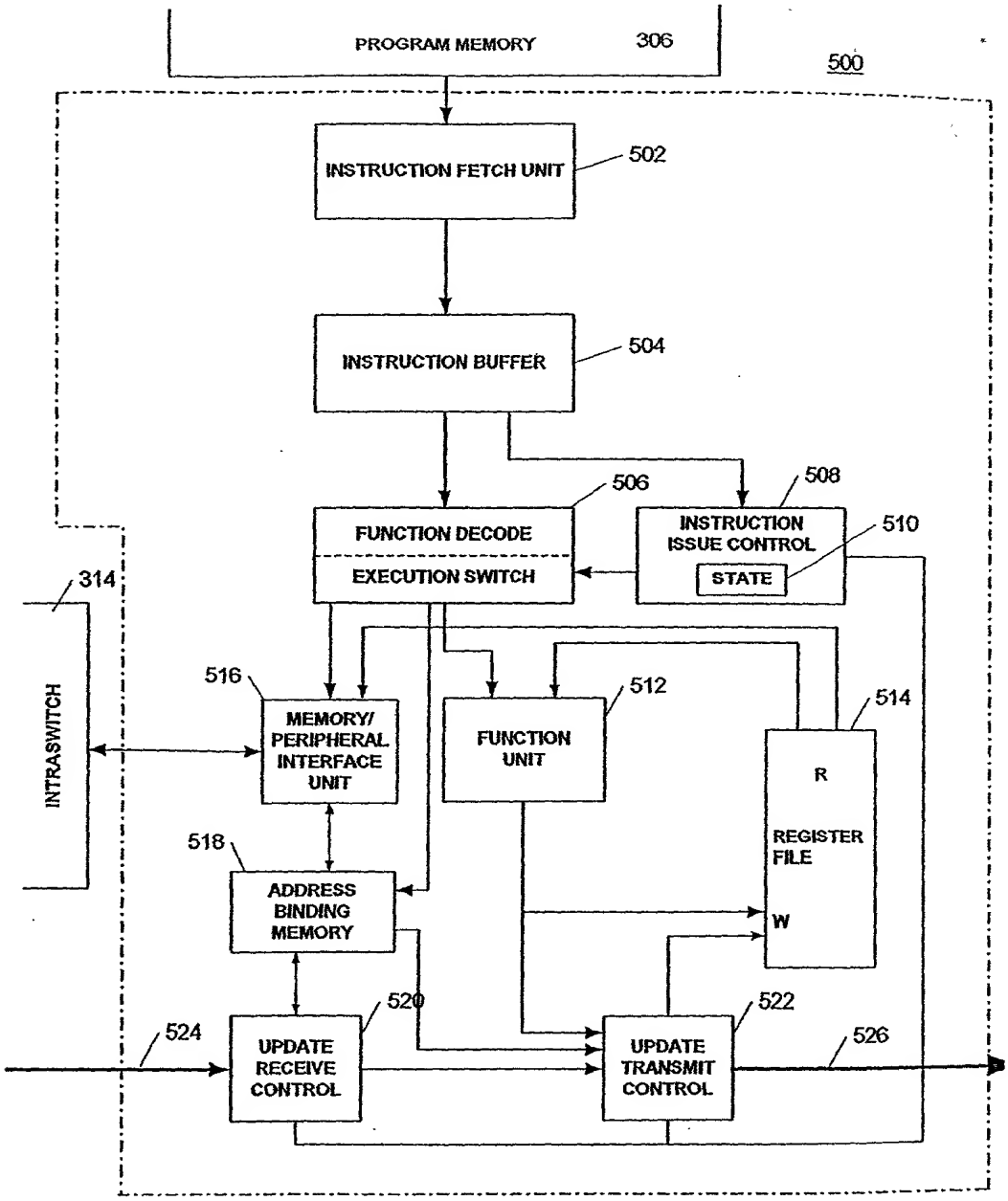
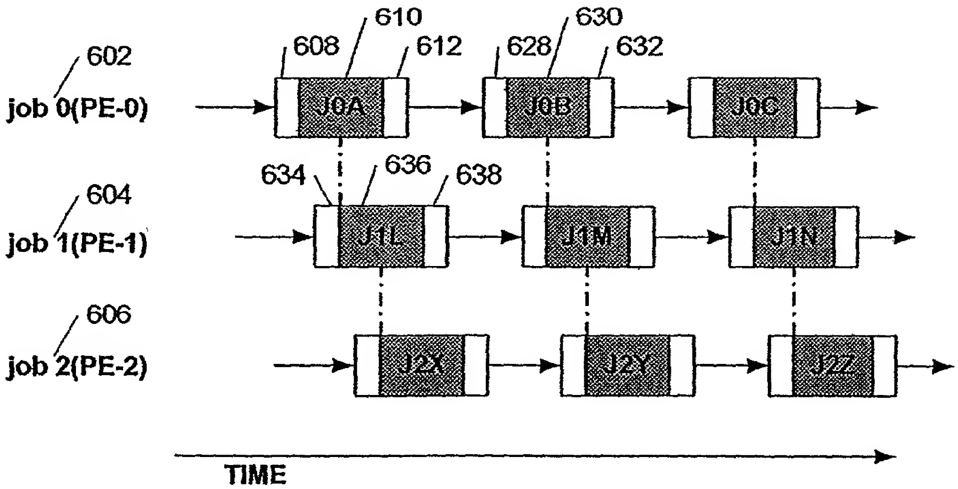

PROGRAM MEMORY
306
500
INSTRUCTION FETCH UNIT
502
INSTRUCTION BUFFER
504
506
508
FUNCTION DECODE
EXECUTION SWITCH
INSTRUCTION ISSUE CONTROL
STATE
510
314
INTRASWITCH
516
MEMORY/ PERIPHERAL INTERFACE UNIT
512
FUNCTION UNIT
514
R
REGISTER FILE
W
518
ADDRESS BINDING MEMORY
520
522
524
UPDATE RECEIVE CONTROL
UPDATE TRANSMIT CONTROL
526

FIG. 5

600



610
630
602
608
612
628
632
job 0(PE-0)
J0A
J0B
J0C
634
636
638
604
job 1(PE-1)
J1L
J1M
J1N
606
job 2(PE-2)
J2X
J2Y
J2Z
TIME

FIG. 6

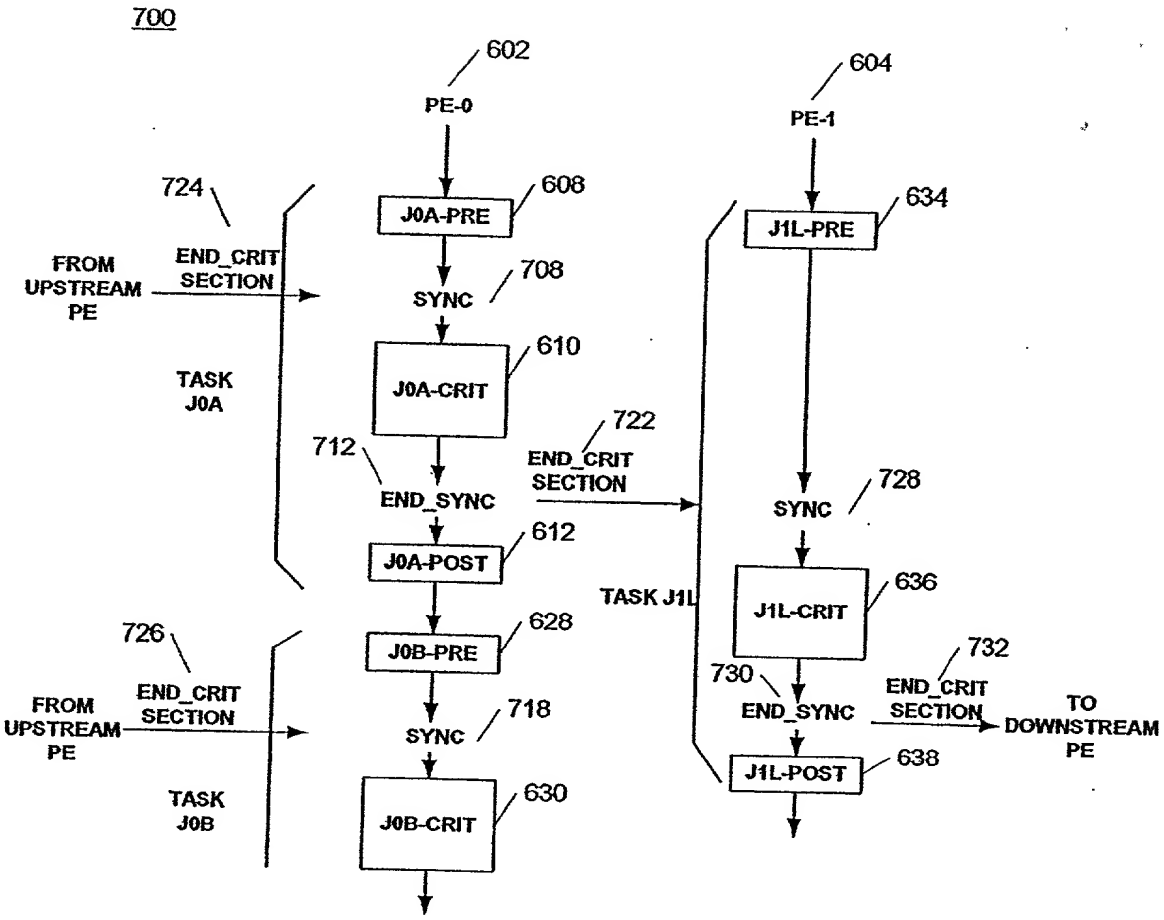

700
602
PE-0
604
PE-1
724
END_CRIT SECTION
FROM UPSTREAM PE
608
J0A-PRE
634
J1L-PRE
708
SYNC
TASK J0A
610
J0A-CRIT
712
END_SYNC
722
END_CRIT SECTION
728
SYNC
612
J0A-POST
TASK J1L
636
J1L-CRIT
726
END_CRIT SECTION
FROM UPSTREAM PE
628
J0B-PRE
730
END_SYNC
732
END_CRIT SECTION
TO DOWNSTREAM PE
718
SYNC
638
J1L-POST
TASK J0B
630
J0B-CRIT

FIG. 7

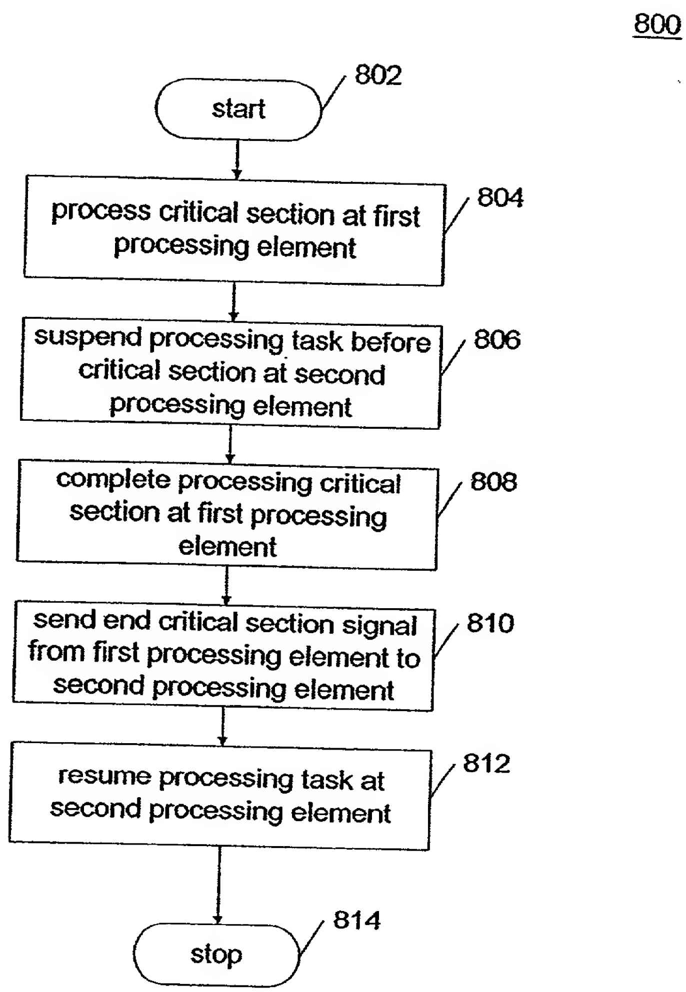

800
start
802
process critical section at first processing element
804
suspend processing task before critical section at second processing element
806
complete processing critical section at first processing element
808
send end critical section signal from first processing element to second processing element
810
resume processing task at second processing element
812
stop
814

FIG. 8

900

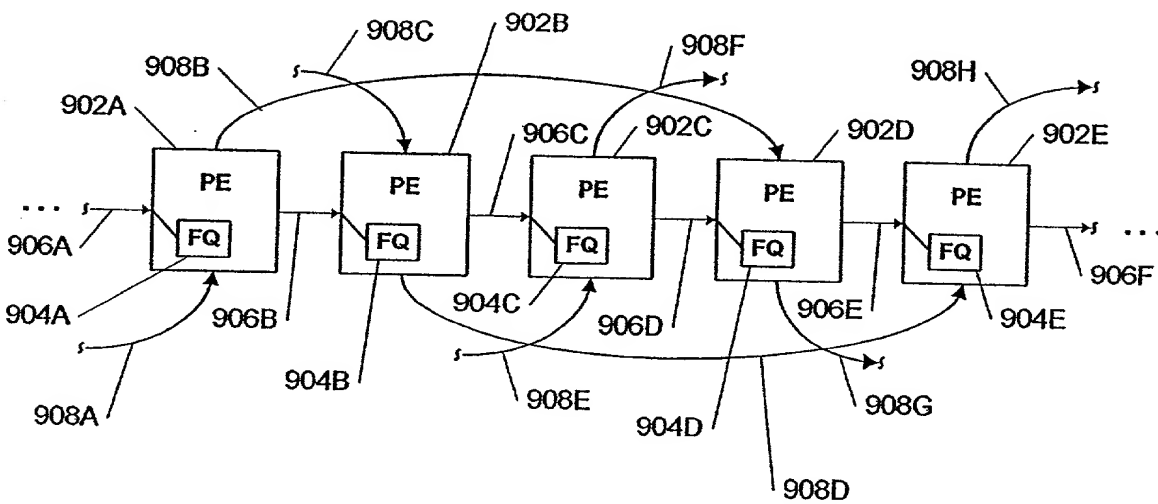
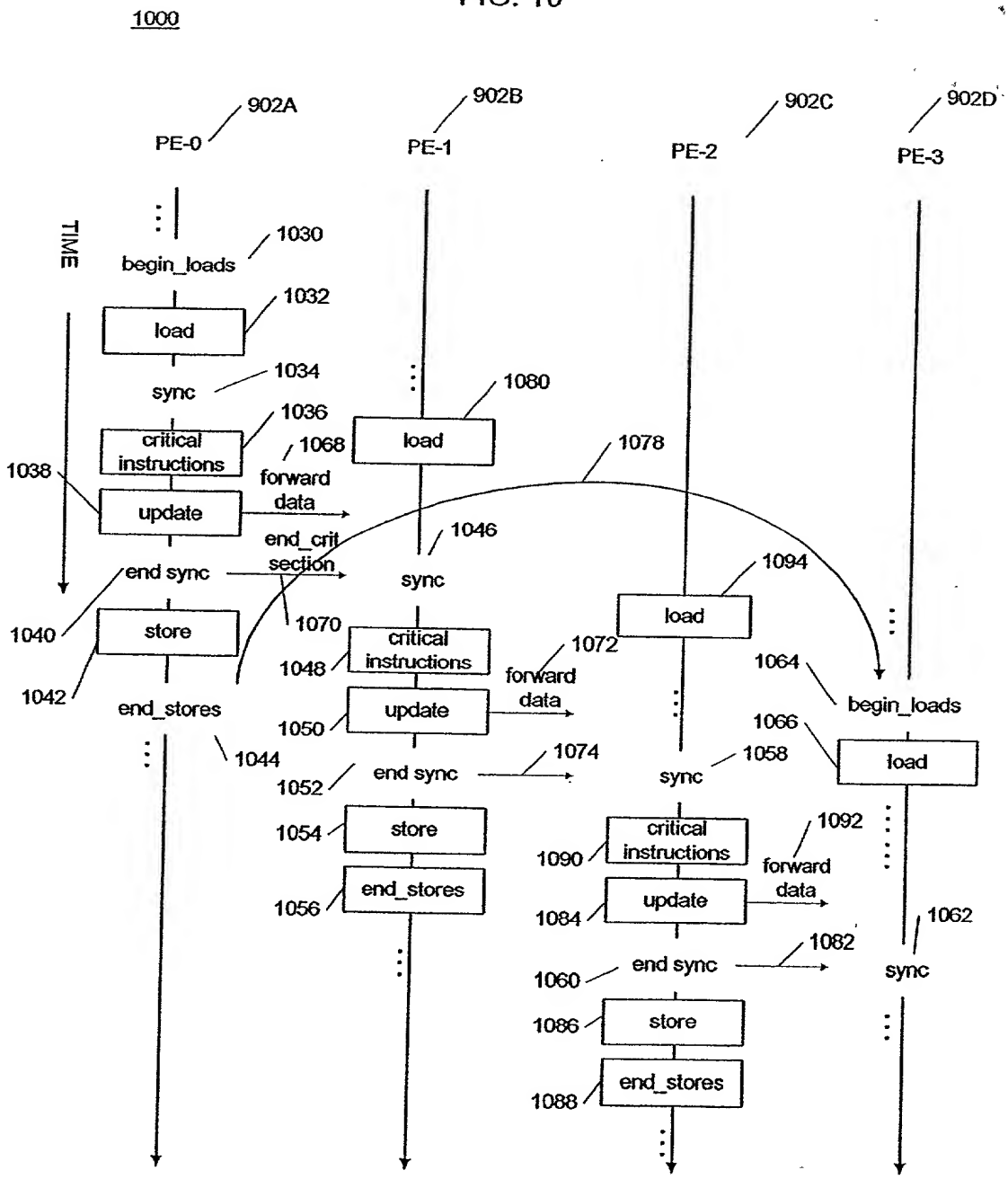

908C
902B
908F
908B
908H
902A
906C
902C
902D
902E
PE
PE
PE
PE
PE
FQ
FQ
FQ
FQ
FQ
906A
906F
904A
906B
904C
906D
906E
904E
904B
908E
908G
908A
904D
908D

FIG. 9

FIG. 10


1000
PE-0
902A
PE-1
902B
PE-2
902C
PE-3
902D
TIME
begin_loads
1030
load
1032
sync
1034
critical instructions
1036
update
1038
forward data
1068
end_crit section
1070
end sync
1040
store
1042
end_stores
1044
load
1080
1078
1046
sync
critical instructions
1048
update
1050
forward data
1072
end sync
1052
1074
store
1054
end_stores
1056
load
1094
sync
1058
critical instructions
1090
update
1084
forward data
1092
end sync
1060
1082
store
1086
end_stores
1088
1064
begin_loads
1066
load
sync
1062

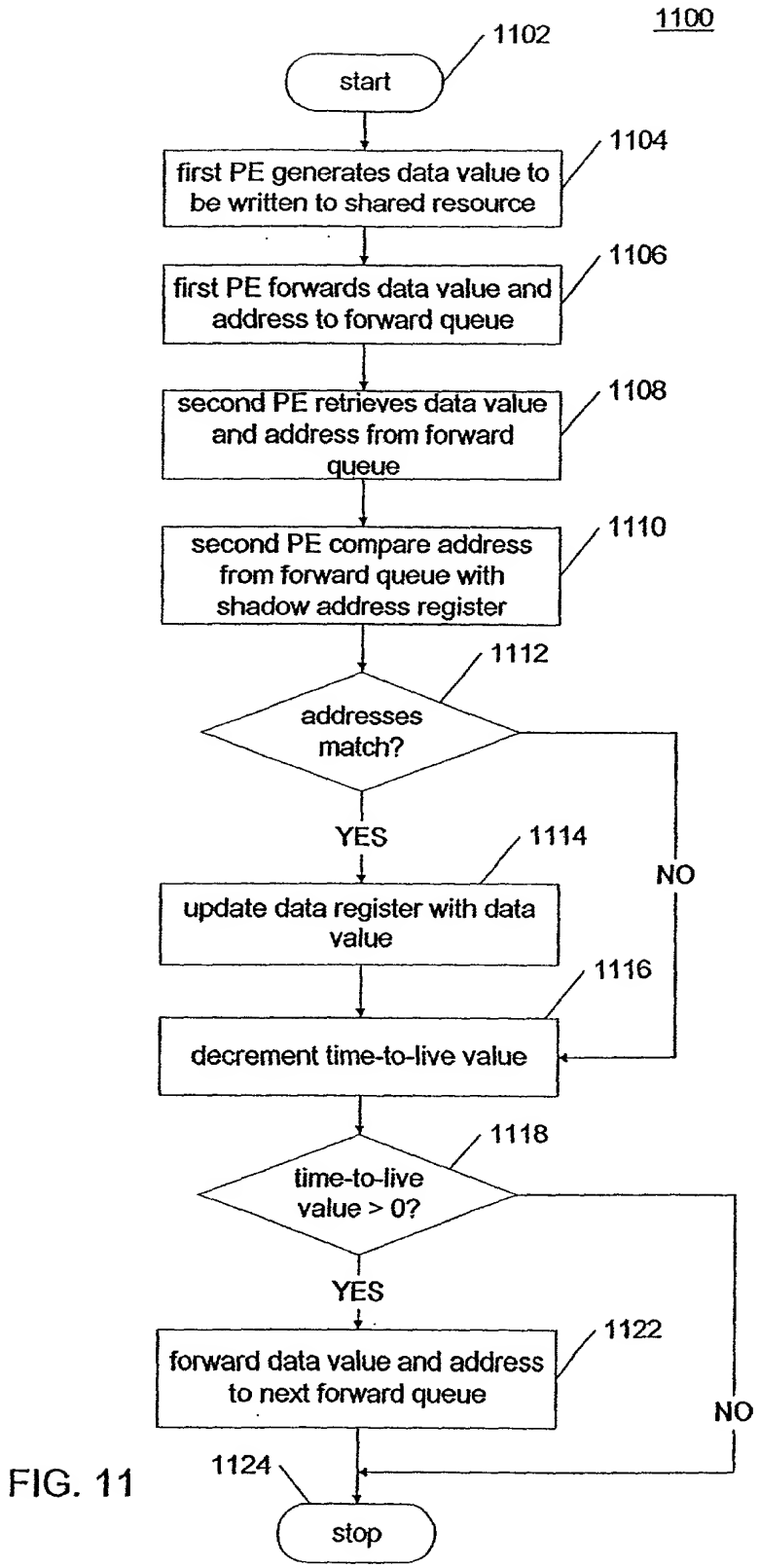


FIG. 11

1200

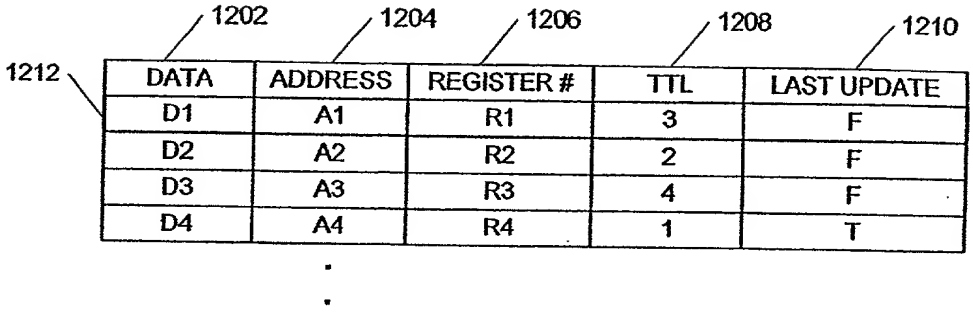


FIG. 12

1300

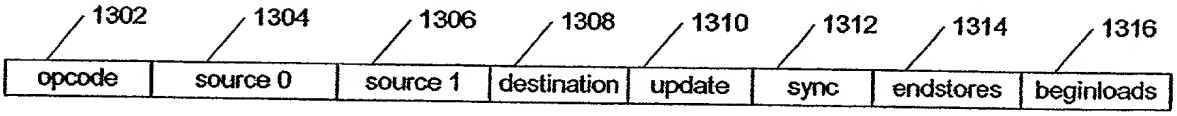


FIG. 13